MHT CET 2025 Apr 22 Shift 2 Question Paper

Time Allowed :3 Hour	Maximum Marks :200	Total Questions :200

General Instructions

Read the following instructions very carefully and strictly follow them:

1. The test is of 3 hours duration.
2. The question paper consists of 150 questions. The maximum marks are 200.
3. There are three parts in the question paper consisting of Physics, Chemistry and Mathematics having 50 questions in each part of equal weightage.

1. A ball is thrown vertically upwards with an initial velocity of 20 m/s. How high will the ball rise? (Take $g = 10$ m/s^2)

(1) 20 m

(2) 40 m

(3) 10 m

(4) 25 m

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2. What is the resistance of a wire of length $L = 2$ m and cross-sectional area $A = 1 \times 10^{-6}$ m^2 made of a material with resistivity $\rho = 1.5 \times 10^{-7}\,\Omega$ m?

(1) $3 \times 10^{-7}\,\Omega$

(2) $3 \times 10^{-6}\,\Omega$

(3) $2 \times 10^{-7}\,\Omega$

(4) $5 \times 10^{-6}\,\Omega$

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3. A lens has focal length $f = 20$ cm. What is the power of the lens?

(1) $+5$ D

(2) $+10$ D

(3) -5 D

(4) -10 D

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4. A sound wave has a frequency of 440 Hz. What is its time period?

(1) 0.00227 s

(2) 0.002 s

(3) 0.0025 s

(4) 0.004 s

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5. What is the kinetic energy of a body of mass 2 kg moving with a velocity of 5 m/s?

(1) 25 J

(2) 10 J

(3) 50 J

(4) 5 J

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6. A capacitor has a capacitance of $5\ \mu$F and a potential difference of 10 V is applied across it. What is the charge on the capacitor?

(1) 5×10^{-5} C

(2) 5×10^{-6} C

(3) 5×10^{-7} C

(4) 5×10^{-8} C

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7. A stone is thrown horizontally from the top of a tower with a speed of 10 m/s. If the height of the tower is 45 m, how much time will the stone take to reach the ground?

(1) 3 s

(2) 4 s

(3) 5 s

(4) 2 s

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8. A current of 2 A flows through a conductor for 10 minutes. What is the total charge that flows through the conductor?

(1) 1200 C

(2) 1000 C

(3) $200\,\mathrm{C}$

(4) $1500\,\mathrm{C}$

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9. An object is placed at a distance of 10 cm from a concave mirror of focal length 15 cm. What is the image distance?

(1) $30\,\mathrm{cm}$

(2) $20\,\mathrm{cm}$

(3) $50\,\mathrm{cm}$

(4) $60\,\mathrm{cm}$

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10. What is the molecular mass of Na_2SO_4?

(1) $142\,\mathrm{g/mol}$

(2) $120\,\mathrm{g/mol}$

(3) $158\,\mathrm{g/mol}$

(4) $98\,\mathrm{g/mol}$

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11. Which of the following is the correct IUPAC name for CH_3CH_2OH?

(1) Ethanol

(2) Methanol

(3) Propanol

(4) Butanol

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12. What is the pH of a 0.01 M solution of HCl?

(1) 2

(2) 4

(3) 1

(4) 3

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13. What is the empirical formula of C_6H_6?

(1) CH

(2) C_2H_3

(3) C_3H_3

(4) C_6H_6

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14. Which of the following ions will have the highest lattice energy?

(1) NaCl

(2) MgO

(3) KCl

(4) LiF

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15. The oxidation number of chlorine in Cl_2O is:

(1) $+1$

(2) -1

(3) 0

(4) $+3$

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16. What is the molar concentration of hydrogen ions in a solution of $0.1\,\mathrm{M}$ HCl?

(1) $0.1\,\mathrm{M}$

(2) $0.05\,\mathrm{M}$

(3) $0.2\,\mathrm{M}$

(4) $1\,\mathrm{M}$

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17. Which of the following gases has the highest density at STP?

(1) CO_2

(2) O_2

(3) N_2

(4) CH_4

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18. If $x = 2$, what is the value of $3x^2 - 5x + 7$?

(1) 9

(2) 7

(3) 8

(4) 10

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19. Find the sum of the roots of the quadratic equation $2x^2 - 5x + 3 = 0$.

(1) $\frac{5}{2}$

(2) $\frac{3}{2}$

(3) $\frac{7}{2}$

(4) $\frac{1}{2}$

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20. Find the area of a triangle with base 8 cm and height 6 cm.

(1) $24\,\text{cm}^2$

(2) $28\,\text{cm}^2$

(3) $48\,\text{cm}^2$

(4) $36\,\text{cm}^2$

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21. If $f(x) = 2x^2 - 3x + 5$, find $f(3)$.

(1) 16

(2) 18

(3) 20

(4) 19

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22. Solve for x in the equation $2x - 3 = 5x + 12$.

(1) $x = -5$

(2) $x = 5$

(3) $x = -6$

(4) $x = 6$

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23. Find the area of a circle with radius 7 cm.

(1) $154\,\text{cm}^2$

(2) $49\,\text{cm}^2$

(3) $22\,\text{cm}^2$

(4) $44\,\text{cm}^2$
